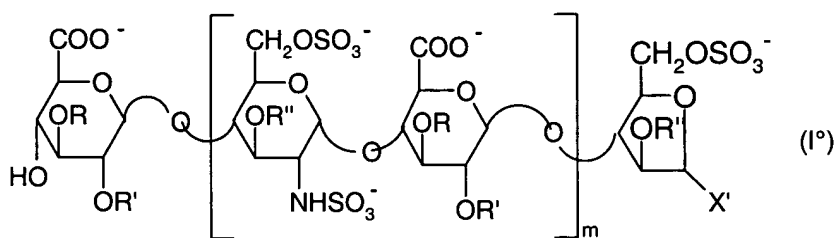


AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A LMW-K5-N,O-oversulfate having a mean molecular weight of from about 3,000 to about 6,000 and a degree of sulfation of from 3.2 to 4.
- 2.-55. (Canceled).
56. (New) The LMW-K5-N,O-oversulfate of claim 1 having a mean molecular weight of 3,750-4,250
57. (New) The LMW-K5-N,O-oversulfate of claim 1 having a mean molecular weight of 4,750-5,250.
58. (New) The LMW-K5-N,O-oversulfate of claim 1 having a mean molecular weight of 5,750-6,250.
59. (New) The LMW-K5-N,O-oversulfate of claim 1 consisting of a mixture of chains in which the preponderant species is a compound of formula I°



in which R, R' and R'' represent hydrogen or SO₃⁻, X' represents a formyl or hydroxymethyl group, for a degree of sulfation of from 3.2 to 4, m represents 4, 5 or 6 and the corresponding cation is a chemically or pharmaceutically acceptable one.

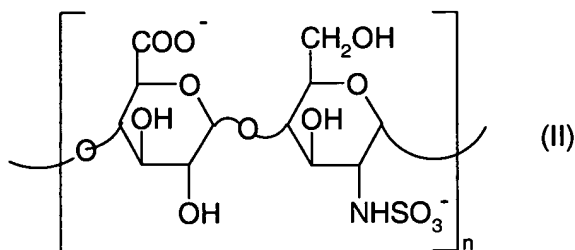
60. (New) The LMW-K5-N,O-oversulfate according to claim 59, having a mean molecular weight of 3,750-4,250.

61. (New) The LMW-K5-N,O-oversulfate according to claim 59, having a mean molecular weight of 4,750-5,250.
62. (New) The LMW-K5-N,O-oversulfate according to claim 59, having a mean molecular weight of 5,750-6,250
63. (New) A LMW-K5-N,O-oversulfate according to claim 1, having a degree of sulfation of from 3.5 to 4.
64. (New) A LMW-K5-N,O-oversulfate according to claim 1, having a degree of sulfation of from 3.5 to 3.9.
65. (New) A process for the preparation of a LMW-K5-N,O-oversulfate having a degree of sulfation of from 3.2 to 4, which comprises
- (a) treating a LMW-K5-N-sulfate obtained by nitrous depolymerization of a K5-N-sulfate and subsequent reduction, in its acidic form, with a tertiary amine or quaternary ammonium hydroxide, letting the reaction mixture stand for a period of time of 30-60 minutes by maintaining the pH of the solution at 7 and isolating its salt with said organic base;
 - (b) treating said tertiary amine or quaternary ammonium salt of said polysaccharide with an O-sulfating agent under O-oversulfation conditions; and
 - (c) treating the product thus obtained with a N-sulfating agent and isolating the LMW-K5-N,O-oversulfate thus obtained.
66. (New) A process according to claim 65, which comprises
- (i) submitting a K5-N-sulfate to a nitrous depolymerisation followed by a reduction, for example by sodium borohydride;

- (ii) treating a LMW-K5-N-sulfate, in its acidic form, with a tertiary amine or quaternary ammonium hydroxide, letting the reaction mixture stand for a period of time of 30-60 minutes, whereby the pH of the solution is maintained at 7, and isolating the corresponding tertiary amine or quaternary ammonium salt;
- (iii) treating said tertiary amine or quaternary ammonium salt of said LMW-K5-N-sulfate with an O-sulfation reactant under O-oversulfation conditions; and
- (iv) treating the product thus obtained with a N-sulfating agent and isolating the obtained LMW-K5-N,O-oversulfate.

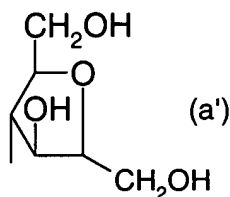
67. (New) A process according to claim 65, wherein said reduction is carried out with sodium borohydride.

68. (New) A process according to claim 65, wherein a LMW-K5-N-sulfate consisting of a mixture of chains in which at least 90% of said chains has the formula II



wherein n is an integer from 2 to 20, containing a 2,5 anhydromannitol unit of structure

(a')

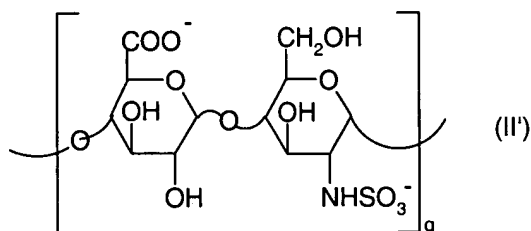


at the reducing end of the majority of chains in said mixture of chains, and the corresponding cation is a chemically and pharmaceutically acceptable one, is used as starting material.

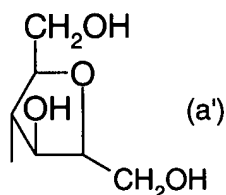
69. (New) A process according to claim 65, wherein said K5-N-sulfate starting material is free of lipophilic substances.

70. (New) A process according to claim 65, wherein the LMW-K5-N-sulfate starting material is used in the form of its sodium salt.

71. (New) A process according to claim 65, wherein said K5-N-sulfate starting material consists of a mixture of chains in which the preponderant species is a compound of formula II'

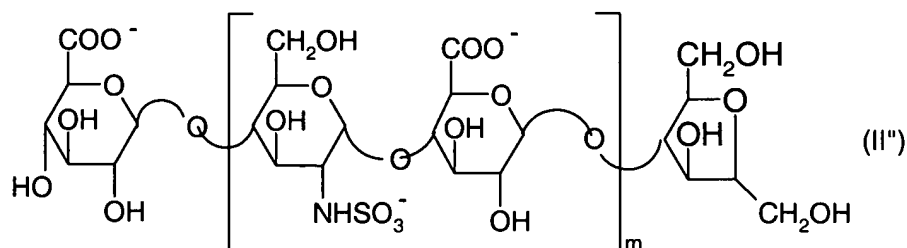


in which q is 4, 5, 6, 7, or 8, containing a 2,5 anhydromannitol unit of structure (a')



at the reducing end of the majority of the chains in said mixture of chains, and the corresponding cation is a chemical or pharmaceutically acceptable one.

72. (New) A process according to claim 65, wherein said K5-N-sulfate starting material consists of a mixture of chains in which the preponderant species is a compound of formula II''



in which m represents 4, 5 or 6 and the corresponding cation is a chemically or pharmaceutically acceptable one.

73. (New) A process according to claim 75, wherein the LMW-K5-N,O-oversulfate is obtained in its sodium salt form and optionally transformed into another chemically or pharmaceutically acceptable salt.

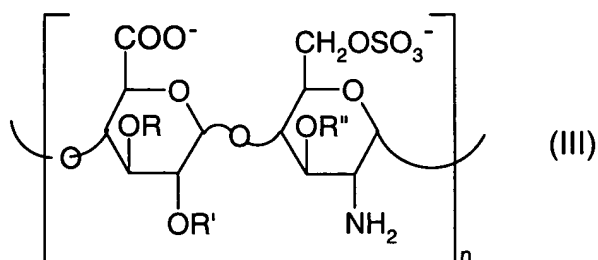
74. (New) A LMW-K5-amine-O-oversulfate having a degree of sulfation of from 2.2 to 3 or one of its chemically or pharmaceutically acceptable salts.

75. (New) A LMW-K5-amine-O-oversulfate according to claim 74, having a mean molecular weight of from about 3,500 to about 11,000 or a chemically or pharmaceutically acceptable salt thereof.

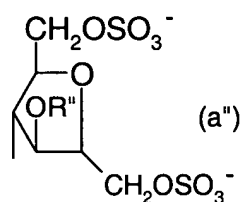
76. (New) A LMW-K5-amine-O-oversulfate according to claim 74 having a degree of sulfation of from 2.2 to 3 and a molecular weight of from 3,500 to 5,200.

77. (New) A LMW-K5-amine-O-oversulfate according to claim 74, substantially free of N-acetyl groups.

78. (New) A LMW-K5-amine-O-oversulfate according to claim 74 consisting of a mixture of chains in which at least 90% of said chains has the formula III

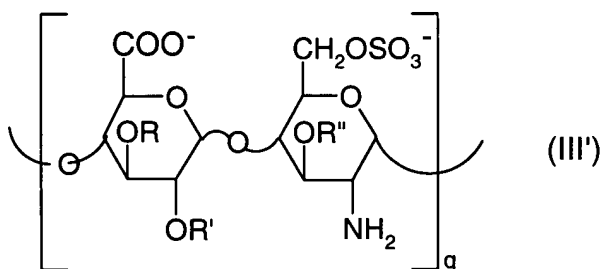


in which R, R' and R'' represent hydrogen or a SO₃⁻ group, n is an integer from 2 to 20, containing a sulfated 2,5-anhydromannitol unit of structure (a'')



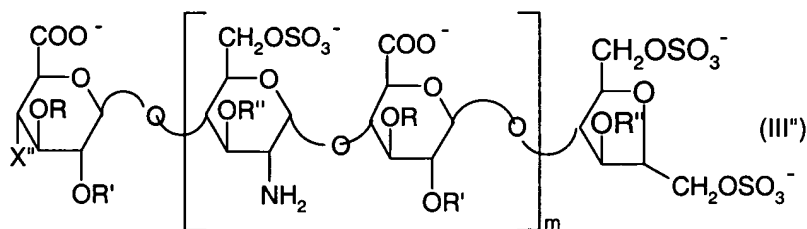
at the reducing end of the majority of the chains in said mixture of chains, for a degree of sulfation of from 2.2 to 3 and the corresponding cation is a chemically or pharmaceutically acceptable one.

79. (New) The LMW-K5-amine-O-oversulfate of claim 78, consisting of a mixture in which the preponderant species is a compound of formula III'



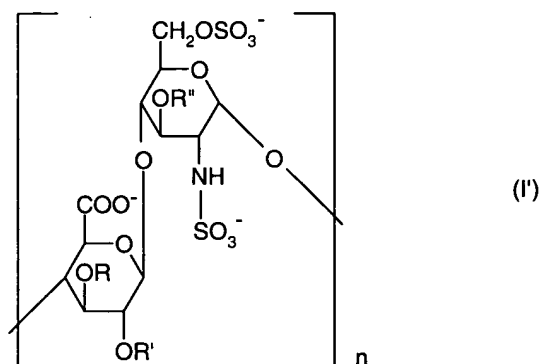
in which q is 4, 5, 6, 7, or 8 and the corresponding cation is a chemically or pharmaceutically acceptable one.

80. (New) The LMW-O-oversulfated-K5 amine of claim 79, consisting of a mixture in which the preponderant species is a compound of formula III''

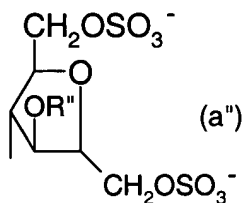


in which R, R' and R'' are hydrogen or SO₃⁻, X'' is OH or OSO₃⁻, for a degree of sulfation of from 2.2 to 3, m is 4, 5 or 6 and the corresponding cation is a chemically or pharmaceutically acceptable one.

81. (New) A LMW-K5-N,O-oversulfate consisting of a mixture of chains in which at least 90% of said chains has the structure I'

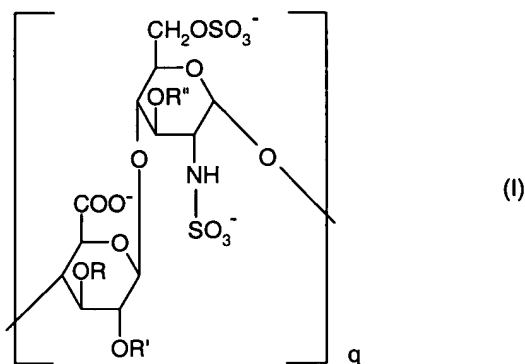


in which n is an integer from 2 to 20, R, R' and R'' represent hydrogen or a SO₃⁻ group, and in which the reducing end of the majority of said chains has the structure (a'')



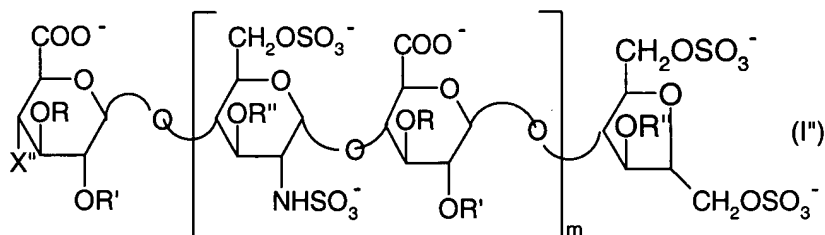
in which R'' is hydrogen or a SO₃⁻ group, for a degree of sulfation of from 3.2 to 4 and the corresponding cation is a chemically or pharmaceutically acceptable one.

82. (New) The LMW-K5-N,O-oversulfate of the claim 81, consisting of a mixture of chains in which the preponderant species is a compound of formula I



wherein q is 4, 5, 6, 7, or 8 and the corresponding cation is a chemically or pharmaceutically acceptable one.

83. (New) The LMW-K5-N,O-oversulfate of claim 82, consisting of a mixture in which the preponderant species is a compound of formula I''



in which m is 4, 5, 6, R, R' and R'' are hydrogen or SO_3^- , for a degree of sulfation of from 3.2 to 4 and the corresponding cation is a chemically or pharmaceutically acceptable one.

84. (New) A LMW-K5-N,O-oversulfate according to claim 81 wherein said cation is the ion of an alkaline metal, an alkaline-earth metal, ammonium, tetra(C_1 - C_4)alkylammonium, aluminum or zinc.

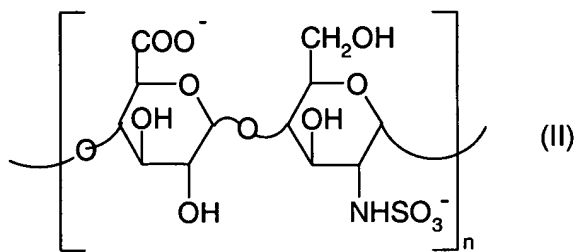
85. (New) The LMW-K5-N,O-oversulfate of claim 84, wherein said cation is the sodium, calcium or tetrabutylammonium ion.

86. (New) A LMW-K5-N,O-oversulfate according to claim 81, having a degree of sulfation of from 3.5 to 4.

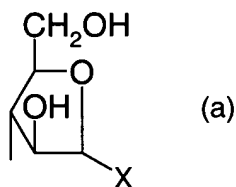
87. (New) A LMW-K5-N,O-oversulfate according to claim 81, having a degree of sulfation of from 3.5 to 3.9.
88. (New) A process for the preparation of LMW-K5-N-sulfates and of their chemically or pharmaceutically acceptable salts, which comprises submitting a K5-N-sulfate to a controlled nitrous depolymerization optionally followed by a reduction and isolating the product thus obtained.
89. (New) A process according to claim 88, wherein said K5-N-sulfates are isolated as their sodium salt which is optionally converted into another chemically or pharmaceutically acceptable salt.
90. (New) A process according to claim 89, wherein said other salt is that of an alkaline metal, an alkaline-earth metal, ammonium, tetra(C₁-C₄)alkylammonium, aluminum or zinc.
91. (New) A process according to claim 90, wherein said other salt is that of sodium, calcium or tetrabutylammonium.
92. (New) A LMW-K5-N-sulfate substantially free of N-acetyl groups, or a chemically or pharmaceutically acceptable salt thereof.
93. (New) A LMW-K5-N-sulfate according to claim 92, consisting of a mixture of chains in which at least 90% of said chains has a mean molecular weight of from about 1,500 to about 7,500.
94. (New) A LMW-K5-N-sulfate according to claim 93, having a molecular weight distribution from about 1,000 to about 10,000.
95. (New) A LMW-K5-N-sulfate according to claim 92, having a mean molecular weight of from about 2,000 to about 4,000.

96. (New) A LMW-K5-N-sulfate according to claim 92, having a mean molecular weight of from about 4,000 to about 7,500.

97. (New) A LMW-K5-N-sulfate according to claim 92, consisting of a mixture of chains in which at least 90% of said chains has the formula II

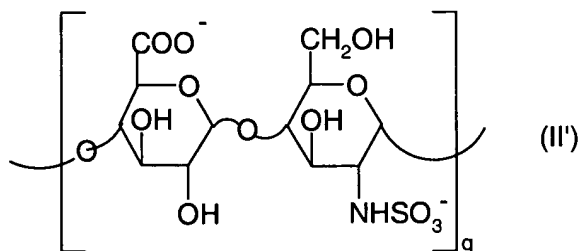


wherein n is an integer from 2 to 20, containing an unit of structure

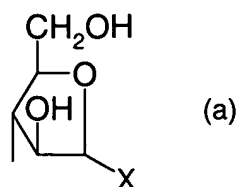


in which X represents formyl or hydroxymethyl, in the majority of said chain and the corresponding cation is a chemically or pharmaceutically acceptable one.

98. (New) A LMW-K5-N-sulfate according to claim 97, consisting of a mixture of chains in which the preponderant species is a compound of formula II'

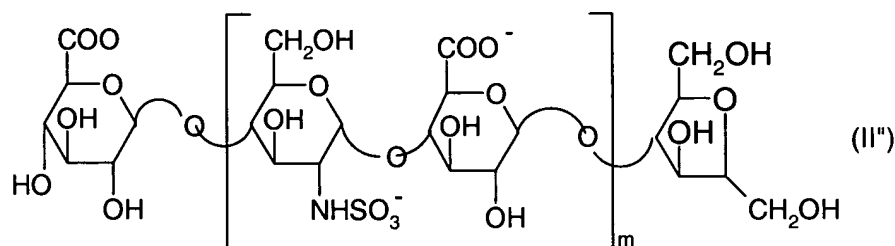


wherein q is 4, 5, 6, 7 or 8, containing an unit of structure



in which X represents formyl or hydroxymethyl, in the majority of said chain and the corresponding cation is a chemically or pharmaceutically acceptable one.

99. (New) A LMW-K5-N-sulfate according to claim 97, consisting of a mixture of chains in which the preponderant species is a compound of formula II''



wherein X represents formyl or hydroxymethyl, m represents 4, 5, or 6 and the corresponding cation is a chemically or pharmaceutically acceptable one.

100. (New) A LMW-K5-N-sulfate according to claim 97 wherein, in the structure (a), X is hydroxymethyl.

101. (New) A LMW-K5-N-sulfate according to claim 92, wherein said salt is that of an alkaline metal, alkaline-earth metal, ammonium, tetra(C₁-C₄)alkylammonium, aluminum or zinc.

102. (New) A LMW-K5-N-sulfate according to claim 92, wherein said salt or cation is that of sodium, calcium or tetrabutylammonium.

103. (New) A pharmaceutical composition comprising, as an active ingredient, a LMW-K5-N,O-oversulfate according to claim 1, in admixture with a pharmaceutical carrier.

104. (New) A pharmaceutical composition comprising, as an active ingredient, a LMW-K5-N,O-oversulfate according to claim 81, in admixture with a pharmaceutical carrier.